Written Testimony of
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On behalf of the
San Joaquin River Exchange Contractors Water Authority

United States House of Representatives
Committee on Resources
Subcommittee on Water and Power

Implementation of the Westside Regional Drainage Plan as a Way to Improve San Joaquin Water Quality

July 28, 2005

Mr. Chairman and members of the committee, my name is Chris White, General Manager and District Engineer of Central California Irrigation District., thank you for providing me the opportunity to testify on "Implementation of the Westside Regional Drainage Plan as a Way to Improve San Joaquin Water Quality".

I am a Registered Civil Engineer (California RCE 48073, August 1991) and a Professional Land Surveyor (California LS 5355, April 1983). Since 1977 I have worked within the region that includes the service area of the San Joaquin River Exchange Contractors Water Authority and the northern service area of the San Luis Unit on issues related to land use, irrigation, and drainage. For the past 12 years, I have served as the District Engineer, (1993 to today), and then as the General Manager (1999 to today) for the Central California Irrigation District.

The San Joaquin River Exchange Contractors Water Authority ("Exchange Contractors") serves an area of approximately 240,000 acres lying adjacent to the San Joaquin River in the area from the City of Mendota to the South and extending northward approximately 80 miles to Crows Landing. The largest proportion of the service area consists of Central California Irrigation District, approximately 145,000 acres, other members of the Exchange Contractors are Firebaugh Canal Water District consisting of approximately 22,000 acres, San Luis Canal Company consisting of approximately 47,000 acres, and Columbia Canal Company consisting of approximately 16,000 acres. The Districts are situated adjacent to the San Joaquin River and have sustained irrigated agriculture since the 1880's. A portion of the Exchange Contractors lies downslope and adjacent to the irrigated areas of the San Luis Unit of the Central Valley Project (San Luis Unit).

Immediate Need for Drainage:

Farmers in the northern area of the San Luis Unit and adjacent areas within the Exchange Contractors face a crisis. The California Regional Water Quality Control Board is in effect terminating their irrigated agricultural drainage to the San Joaquin River by 2009. Without drainage, the land will become water logged and unusable and farming will be extinguished within the area. The cancer will continue to consume downslope lands, expanding to the San Joaquin River where environmental and surface and ground water quality impacts will be severe.

The Bureau of Reclamation has been under the requirement to provide drainage to this area for over 40 years. For various reasons the Bureau has been unable to provide drainage. As a result, there have been over 40 years of conflict between the local irrigation and drainage districts. The inability has also resulted in numerous lawsuits by the Federal Water District Farmers and by the Exchange Contractors against the Bureau. In fact the first law suite by the Exchange Contractors was filed over 40 years ago to insure the provision of drainage so that our area would not be impacted. Our

Historical rights to drain our land, (we have been draining since the 1880's) are now threatened by te new drainage standards. Even though the Bureau has been ordered by Federal Court to " … without delay, provide drainage to the San Luis Unit, pursuant to the statutory duty imposed by section 1(a) of the San Luis Act.", and n response the Bureau is preparing the "San Luis Drainage Feature Re-evaluation" Environmental Impact Statement, drainage will not be provided in time to preserve our farmers. The new State standards curtail drainage to the River by 2009. Our farmers will be out of business years before the Bureau is scheduled to provide the drainage required by the San Luis Act.

The San Luis Drainage Feature Re-evaluation includes the entire San Luis Unit. While it recognizes the Westside Regional Drainage Plan as an alternative to provide drainage to our area, referred to as the northern area, it includes the rest of the San Luis Unit lands which do not drain surface water to the San Joaquin River. The other lands are not under the same regulatory time constraints to eliminate drainage discharges as the northern area. Their re-evaluation is being accomplished in response to the Court Order and not the new regulatory timelines. It can not be completed in time to preserve farming in our area.

The Exchange Contractors and San Luis Unit Contractors have developed the Westside Regional Drainage Plan. We have been working at the solution since 1996 and have completed several elements of the plan using limited state and local funds. The point is that we have already created a foundation on which to build a drainage plan, we do not need to start from scratch with the Bureau's plan.

The Westside Regional Drainage Plan eliminates salt discharges from the Project Area to the San Joaquin River. The West Side Plan also provides the solution for many of the Bureau's (and States) other San Joaquin River water quality requirements. The Central Valley Regional Water Quality Control Board has identified selenium, salt, boron and pesticide toxicity as the most significant water quality problems in this watershed. Analysis conducted for the San Joaquin River Water Quality Management Group indicates that implementation of the Westside Regional Drainage Plan will assure salinity and boron concentrations are met at the Vernalis monitoring station on the San Joaquin River. This is the key focus for compliance in the Board's Salinity and Boron Total Maximum Daily Load (TMDL) proposal. The implementation of the Westside Regional Drainage Plan would provide a means for successfully addressing water quality concerns for salinity and boron on the lower San Joaquin River. It is consistent with the governments own Drainage Feature Re-evaluation and is identified therein as a local alternative.

Our commitment to the Plan is real. We have spent about $60 million on the Plan thus far and another over $100 million is necessary to complete the Plan's implementation over the next four years. We need your help and support to ensure that the project is completed so that our farmers can maintain productive agriculture into the future..

West Side Regional Drainage Project Background

The Project Area of the Plan basically covers a 97,400 acre agricultural region on the westerly side of the San Joaquin Valley. It is located about eight miles south of Los Banos and is bounded on the west by Interstate 5, on the east by Highway 33, on the north by the CCID Main Canal, and by Westlands Water District on the south (see Figure 1). The PROJECT AREA includes seven districts (Broadview Water District, Camp 13 Drainage District, Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, and Widren Water District) and approximately 7,500 acres of lands that are not incorporated into any district. The area is highly productive, producing an estimated $113 million annually in agricultural crop market value, with an additional estimated $126 million generated for the local and regional economies, for a total estimated economic value of $239 million.

Approximately 48,000 acres of the Project Area have subsurface drainage systems that remove the perched saline water and drain it out of the Drainage Area. Additionally, there are more than 150 miles of deep open drains that collect subsurface drain water and transport it out of Project Area. Historically, this drain water was discharged into wetland supply channels and used as a water supply by the wetlands to the north of the Project Area, and eventually discharged to the San Joaquin River through Salt Slough. However, with the discovery of elevated levels of selenium concentrations in the drain water, this practice was discontinued. A "flip-flop" system of alternating between using these channels to supply fresh water to the wetlands and as drains to the San Joaquin River (SJR) was utilized until September 1996, with the implementation of the Grassland Bypass Project (GBP).

The GBP is an innovative program that was designed to improve the water quality in the wetland channels. The GBP consolidates subsurface drain water from the Project Area into a single channel (the Grassland Bypass Channel) and into the San Luis Drain, where it is discharged into Mud Slough (North), approximately eight miles upstream of the SJR. Negotiation of a Use Agreement began in 1988 and included the U.S. Bureau of Reclamation, the U.S. Environmental Protection Agency, the U.S. Fish & Wildlife Service, the Central Valley Regional Water Quality Control Board, Contra Costa Water District, Contra Costa County, and Environmental Defense. The environmental documentation and Use Agreement were completed in 1995, and a regional drainage entity (the Grassland Area Farmers) was formed under the umbrella of the San Luis & Delta-Mendota Water Authority.

Monthly and annual selenium load limits were incorporated into the Use Agreement, as well as a procedure to assess incentive fees if the allocations were exceeded. Significant water flow, quality, and biological monitoring are also included in the project. In 2001, the GBP was extended for nine years. The extended Use Agreement also included reduced selenium load allocations. By 2010, the dry year selenium water quality objective in Mud Slough (North) will need to be met, and load allocations will be significantly lower than current discharges. Figure 3 shows the

historic selenium load from the Project Area, as well as the current and future load allocations. In water year (WY) 2002, drainage volume has been reduced 46%, selenium load has been reduced 61%, salt load has been reduced 35% and boron load has been reduced 25%, all from pre-project conditions in WY 1996.

As shown in Figure 3, the efforts of the Grassland Area Farmers in the implementation of the GBP have had a significant impact in reducing the load of selenium discharged to the SJR. However, future load limits, coupled with the requirement to comply with water quality objectives in Mud Slough (North) by 2010 will make it infeasible, if not impossible, to continue any significant drainage discharges from the Project Area. It is the belief of the Grassland Area Farmers that the ultimate drainage solution for the Project Area will be complete "In-Valley" management and disposal for agricultural drainage[1], such that no subsurface drain water leaves the Project Area boundary.

[1] Agricultural drainage refers to drain water produced during irrigation and pre-irrigation water applications. It does not include runoff resulting from rainfall or stream runoff.

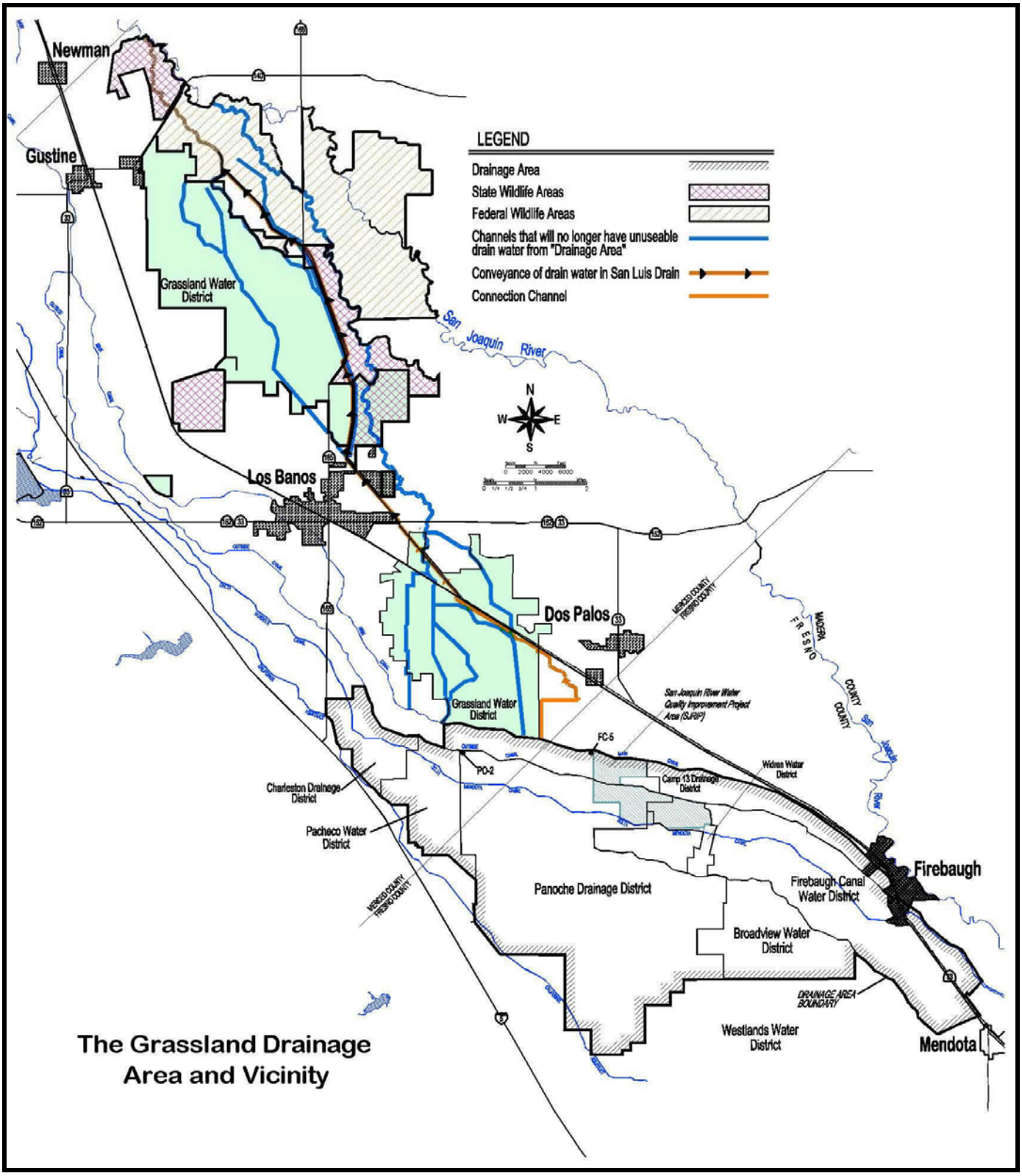


Figure 1: Grassland Drainage Area (Project Area) and wetlands.

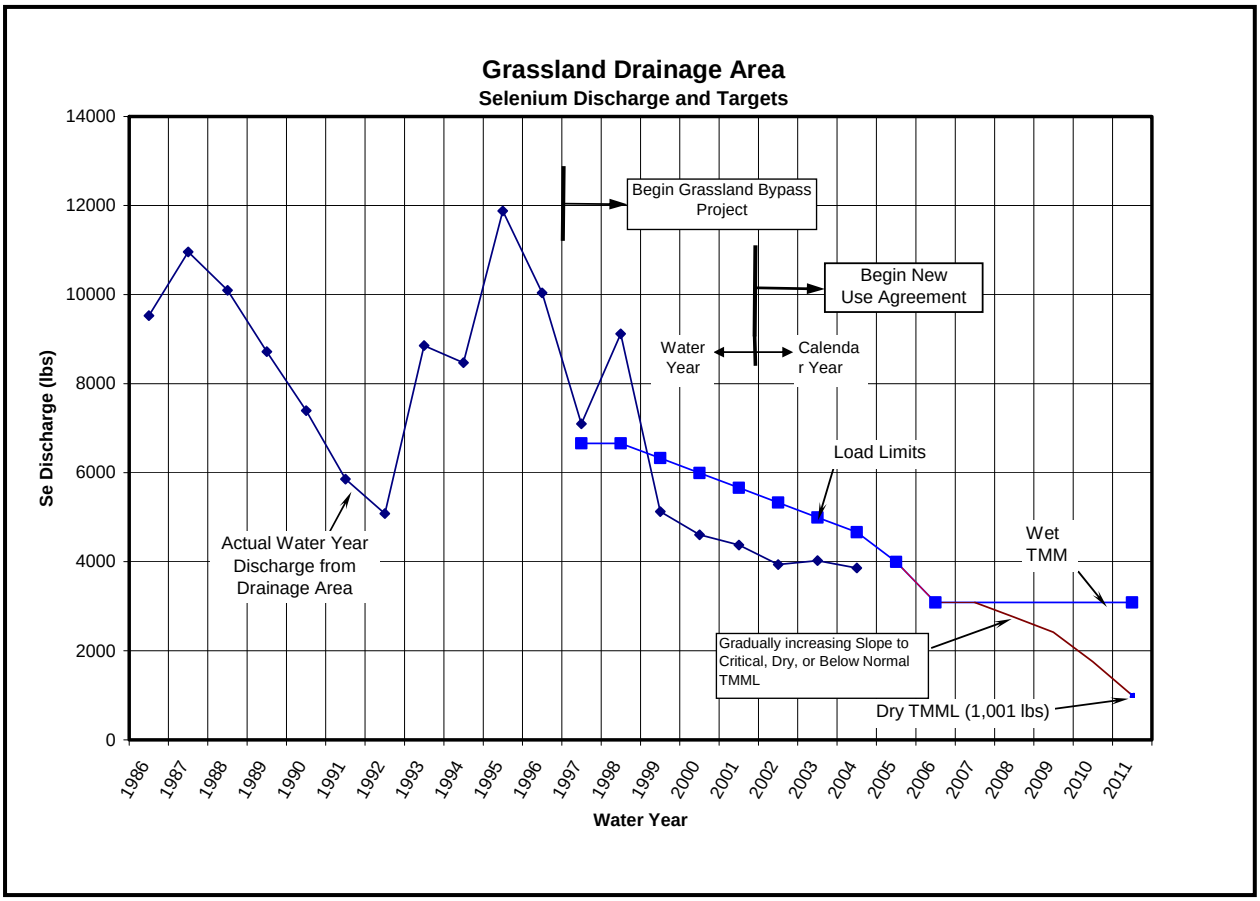
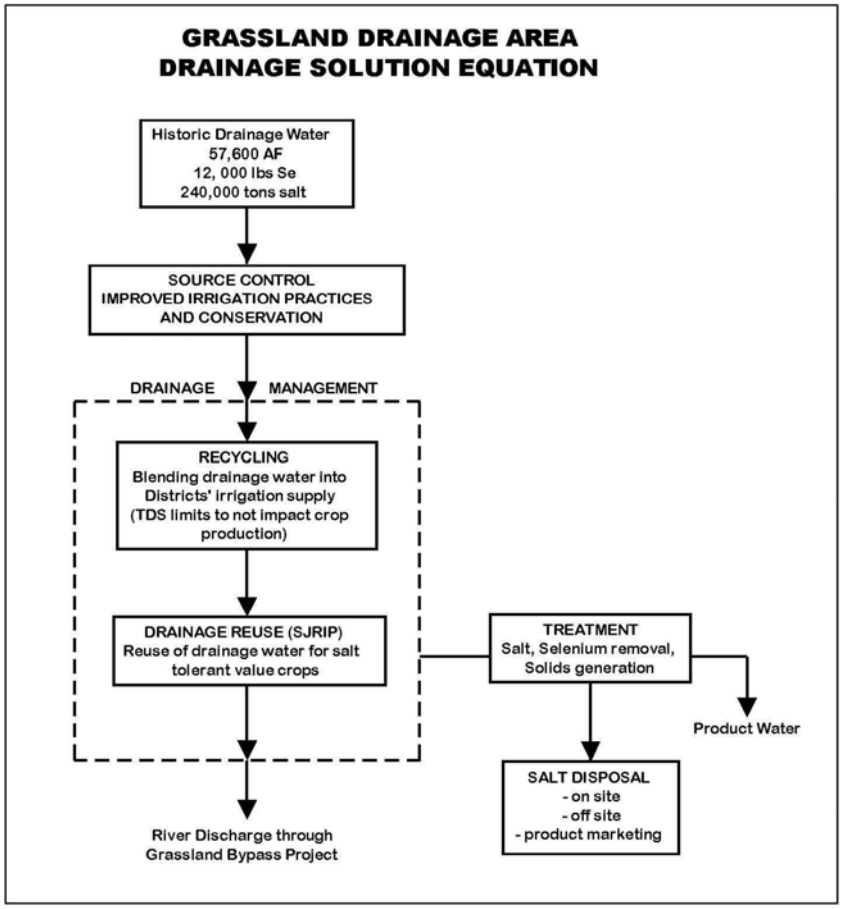


Figure 2: Historic Selenium loads prior to Grasslands Drainage Project.

Since the initiation of the GBP, discussions of drainage solutions have gone beyond the boundaries of the initial districts to include additional members of the CVP's San Luis Unit. The features of the project have thus been expanded to include water supply reliability improvements through groundwater management and additional water conservation into what is now called the West Side Regional Drainage Plan.

Figure 3 shows the drainage management schematic implemented by the Grassland Area Farmers. Currently there is a river discharge. When full scale treatment is implemented, discharge of irrigation drain water to the lower San Joaquin River will be eliminated in all but the most wet hydrologic circumstances. In very wet periods and field flooding conditions, tile drainage can commingle with surface runoff and reach river drainages. However, this is an abnormal condition and occurs when there is ample capacity in the river systems to assimilate any salts from the commingled drainage. These discharges cease when rainfall and flooding abate and field conditions return to normal.

Figure 3
Drainage Management Schematic Process



Drainage reuse in the Project Area began in 1998, when Panoche Drainage District began applying drainage water to pasture and alfalfa fields as part of its efforts to meet selenium load targets. In January 2001, with funding from the State of California Proposition 13, the SJRIP, Phase I was implemented. Phase I of the SJRIP included the purchase of approximately 4,000 acres of farmland within the Grassland Drainage Area, some 1,800 acres of which was already planted with alfalfa, pasture, and asparagus. Throughout the irrigation season of 2001, drain water from the Grassland Drainage Area was used to irrigate these crops, displacing more than 2,800 acre feet. Table 1 shows the volume of drain water and associated constituents reused on the PDD Drainage Reuse Project and SJRIP since 1998.

Table 1
Reuse of Drainage Water 1998-2004

Water Year	Reused Drain Water	Displaced Selenium	Displaced Boron	Displaced Salt
	(acre feet)	(pounds)	(pounds)	(tons)
1998¥	1,211	329	NA	4,608
1999¥	2,612	321	NA	10,230
2000¥	2,020	423	NA	7,699
2001	2,850	1,025	61,847	14,491
2002	3,711	1,119	77,134	17,715
2003	5,376	1,626	141,299	27,728
2004	7,890	2,417	193,956	41,444

NA = Not Available
¥ PDD drainage reuse project prior to SJRIP

Currently, more than 2,800 acres of the SJRIP are planted to salt tolerant crops, with an additional 570 acres in the process of being developed. However, only 1,600 acres of the area will be tiled by the end of 2005. In order to maintain long-term farmability, subsurface drainage must be provided to the remaining 2,400 acres. Additionally, another 2,000 acres (estimated) will be required to reuse the entire volume of subsurface drainage and implement a zero-discharge drainage solution. The estimated cost to acquire this 2,000 acres is $9,000,000. To complete the development of both the existing SJRIP and the new reuse area (including tiling and planting), $4,000,000 will be required.

A salt balance within the reuse areas will be maintained by leaching salts from the soil profile through the tile systems. It is estimated that approximately 25% of the applied water will need to be leached from the soil in order to avoid a salt build up. This will generate approximately 4,000 acre feet (annually) of drainage water. In the short term, this water will be reused within the project or discharged through the Grassland Bypass Project. However, the Grassland Area Farmers, aware that this is only a short-term solution, are aggressively pursuing treatment and are currently funding a field level project to develop the final treatment method. The proposed pilot plant will use a membrane treatment method to produce high quality irrigation water, and the resulting waste stream will be processed into a dry salt that can be marketed.

Summary Description of the West Side Regional Drainage Plan

The West Side Regional Drainage Plan is an integrated plan with goals to eliminate irrigated agricultural drainage water discharge to the San Joaquin River from, and enhance water supply reliability for, about 90,000 acres in the Grassland Drainage Area as shown in Figure 4. The Program began as a successful effort to reduce selenium discharges to the San Joaquin River. It is now being proposed for expansion to go beyond regulatory requirements and eliminate selenium and salt discharges to the River from these lands, while maintaining productivity of production agriculture in the region and enhancing water supplies to lands remaining in production. It also is key to solving disputes among neighboring water and drainage districts regarding localized impacts of agricultural

drainage and a portion of the US Bureau of Reclamation's obligation to provide drainage to the region.

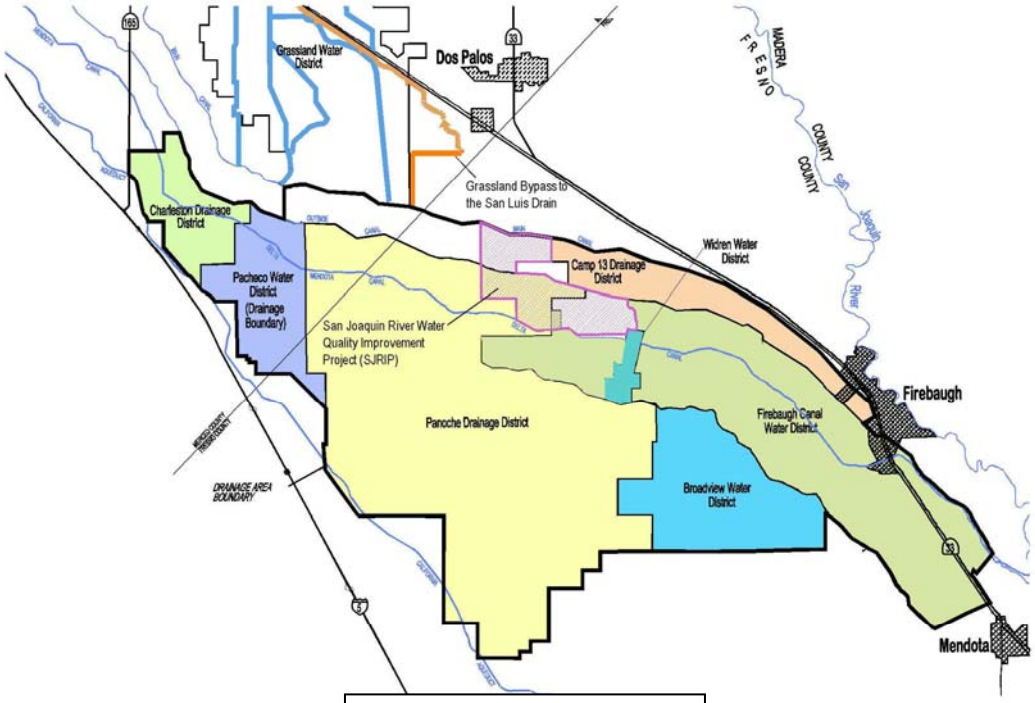
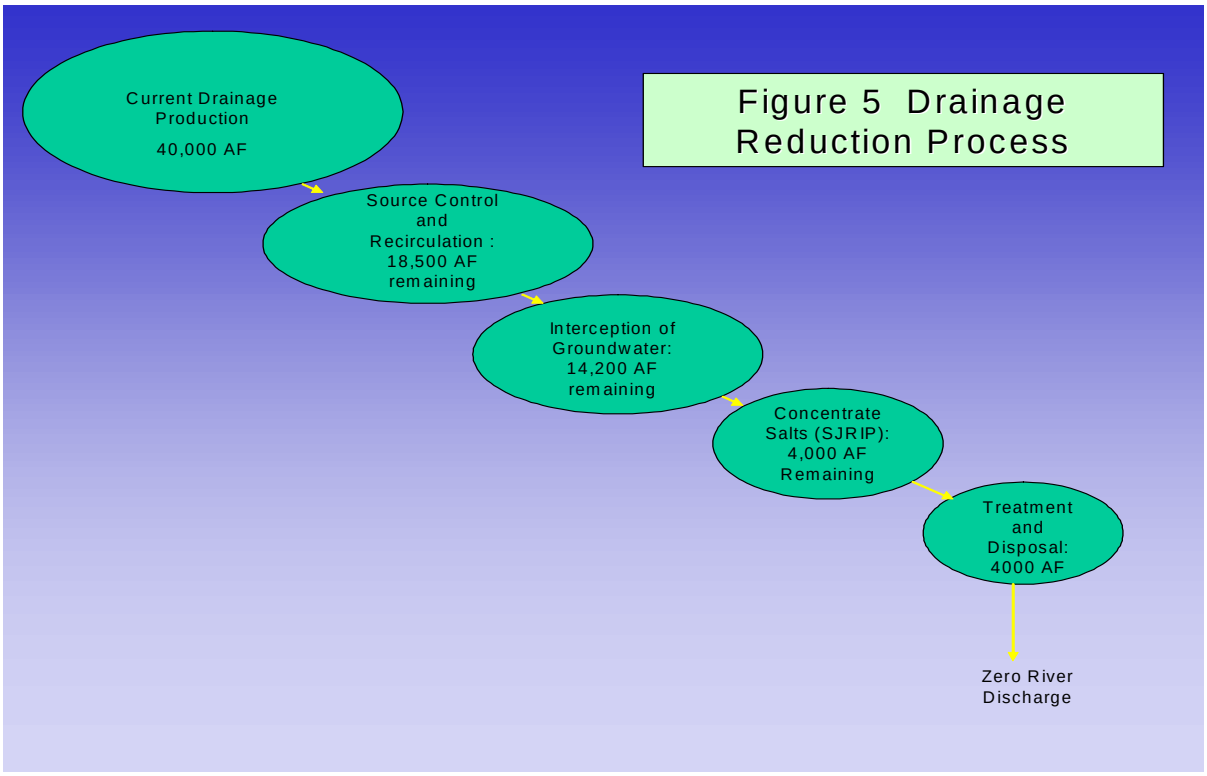


Figure 4
West Side Drainage Plan
Project Area and Districts

The Plan relies on five general tactics to reduce and then eliminate high salinity irrigation drainage from these lands and improve water supplies:

1) Reduction of drainage volumes to be managed through source control/efficient water management techniques such as replacement of furrow irrigation with micro-irrigation technology, and lining or piping of unlined delivery canals;
2) Recirculation of tailwater on primary irrigation lands;
3) Collection and reuse of tile drainage water on salt tolerant and halophytic crops in order to concentrate drainage;
4) Installation of groundwater wells to lower groundwater in strategic locations to eliminate groundwater infiltration into tile drains and to provide a new water supply.
5) Treatment and disposal of remaining drainage water through reverse osmosis, evaporation and disposal or reuse of salts.

The use of these techniques and the consequent reduction in drain water is graphically displayed in Figure 2



With about 4,000 acres of land currently being used as drainage water re-use area, reductions of salt discharges through the San Luis Drain and into Mud Slough and then to the San Joaquin River have decreased. Further actions on the Plan through additions of more reuse lands and drainage improvements to existing and new lands, with ultimate treatment of concentrated brine, will eliminate the remaining discharge.

An incidental benefit of this Plan, found through analysis by the San Joaquin River Water Quality Management Group, is that it assures compliance with water quality salinity objectives at Vernalis and reduces the frequency in violations of objectives at Brandt Bridge by 71% over a 73-year hydrology.

The West Side Regional Drainage Plan (WSRDP) encompasses and integrates six of the nine eligible project types under the Proposition 50 Chapter 8 Program for Implementation Grants as shown in Table 1. It builds on millions of dollars in federal and state research and planning expenditures over the past thirty years, attempting to reach a solution to agricultural drainage concerns in the West side of the San Joaquin Valley.

About $60 million has been spent on the Plan thus far and another $92.5 million is necessary to complete the Plan's implementation over the next four years as shown in Table 2.

Table 2, Remaining West Side Regional Drainage Plan Projects for Completion, describes the full remaining effort to complete the West Side Regional Drainage Plan.

Table 2
Remaining West Side Regional Drainage Plan Projects for Completion

Solution Component	2005	2006	2007	2008	2009	2010	Total
Irrigation Improvements	$3,310,000	$4,540,000	$4,540,000	$4,540,000	$2,300,000	$1,410,000	$20,640,000
Distribution Facility Improvements	$200,000	$5,400,000	$2,690,000	$2,500,000			$10,790,000
Deep Groundwater Pumping Project		$3,000,000	$4,000,000	$4,000,000	$4,000,000		$15,000,000
Broadview Resource Management Project			$500,000	$500,000	$500,000		$1,500,000
Reuse Project Expansion and Development	$1,000,000	$1,000,000	$3,000,000	$3,000,000	$3,820,000		$11,820,000
Reuse Land Purchase		$9,000,000					$9,000,000
Treatment Plant Development (pilot and full scale plant)	$125,000	$125,000	$1,000,000	$250,000	$11,000,000	$11,000,000	$23,500,000
Total	$4,635,000	$23,065,000	$15,730,000	$14,790,000	$21,620,000	$12,410,000	$92,250,000

Project Integration within the West Side Regional Drainage Plan Area

The West Side Regional Drainage Plan is a collection of projects and strategies that, taken together across boundaries of multiple irrigation districts, serves to solve drainage problems that have defied solution on the San Joaquin River since the 1950's. Individually pursued by either the partnership of districts involved in the Plan or utilization of all the strategies by any one district could not solve the drainage problems facing the region. Only by joining together in a regional solution and expanding the scale of each strategy and project to encompass the Grassland Drainage Area districts with San Luis Unit partners can the plan become effective in resolving local disputes over the impact of agricultural drainage from lands within the San Luis Unit of the Central Valley Project and in removing enough saline drainage to the San Joaquin river to address the water quality impairment of the river due to saline discharges.

Water Quality Effects of the West Side Regional Drainage Plan

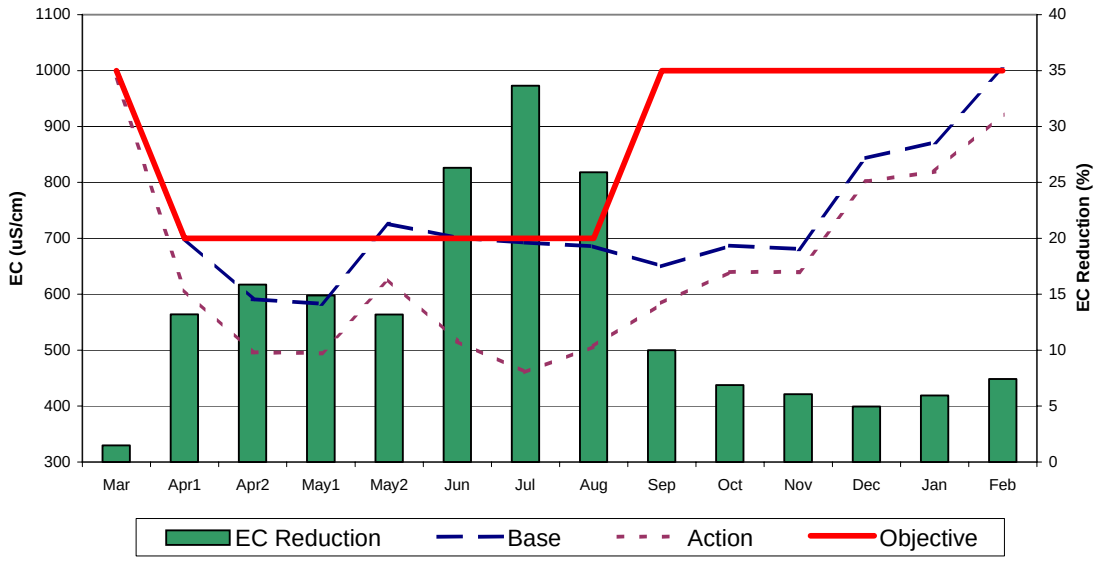
The Plan will improve water quality on the lower San Joaquin River, which is impaired by salinity and boron as described in the Summary Recommendations of the San Joaquin River Water Quality Management Group for Meeting the Water Quality Objectives for Salinity Measured at Vernalis and Dissolved Oxygen in the Stockton Deep Water Ship Channel, by the San Joaquin River Water Quality Management Group, dated July 7, 2005 and attached as Att6_ProjDesc_2of4 . The West Side Regional Drainage Plan was found to be the highest priority action to implement in order to improve salinity (and by extension boron) levels in the lower San Joaquin River at Vernalis. Modeling of the salinity reductions created by the Plan indicates that salinity objectives at Vernalis can be assured to be in compliance when compared to baseline conditions prior to implementation of the Plan. The current baseline of Vernalis salinity exceedences on a monthly average indicates 13 monthly exceedences occur over the 73-year period of analysis.

These violations occur during eight different water years. Eight of these monthly exceedences occur during five years of the 1987-92 drought. Six of these monthly exceedences occur during summer months (July-September). Implementation of the West Side Regional Drainage plan would cure these exceedences in all cases. Figure 3 below shows a graphic description of the Plan's performance in critically dry years, the most prevalent time exceedences are expected to occur.

Leslie Grober of the Central Valley Regional Water Quality Control Board has stated that implementation of the Plan would be consistent with the real-time element alternative to the Regional Board's TMDL for the lower River and would provide a means for successfully addressing water quality concerns expressed in the Regional Board's TMDL for salinity and boron on the lower San Joaquin River.[2]

[2] Stated at meeting of the San Joaquin River Water Quality Management Group, June 28, 2005.

Figure 7
Vernalis Salinity by Month: Critical Year Average – Effect of Westside Regional Drainage Plan (Action)



Relationship to Central Valley Regional Water Quality Control Board Watershed Management Initiative

The Central Valley Regional Water Quality Control Board's Watershed Management Initiative Section IV. State of Watershed Report, San Joaquin River Watershed identifies selenium, salt, boron and pesticide toxicity as the most significant water quality problems in this watershed. Analysis conducted for the San Joaquin River Water Quality Management Group indicates that implementation of the West Side Regional Drainage Plan as mentioned above will assure salinity and boron concentrations are met at the Vernalis monitoring station on the San Joaquin River. This is the key focus for compliance in the Board's Salinity and Boron TMDL. The Plan will also implement, on a watershed basis, termination of subsurface agricultural discharges from the Grassland Drainage Area into Mud Slough North as the means to comply after October 1, 2010, with TMML's established pursuant to California Regional Water Quality Control Board, Central Valley Region Order No. 5-01-234, Waste Discharge Requirements for San Luis & Delta-Mendota Water Authority and United States Department of the Interior Bureau of Reclamation Grassland Bypass Project (Phase II) Fresno and Merced Counties.